What is claimed is:

Claim 1. An X-ray imaging device comprising:

an X-ray-electric conversion layer;

a plurality of pixel electrodes arranged in an array on one surface of the layer;

a field effect type thin film transistor connected to each pixel electrode for pixel switching, including source, drain and gate electrodes, either one of source and drain electrodes being connected to the pixel electrode, the other one being connected to a signal output line, and the gate electrode being connected to a scanning line; and

a gate drive circuit for switching the thin film transistor by applying a positive gate voltage pulse for switch-on to the gate electrode through the scanning line;

wherein the gate drive circuit in a switch-off period applies to the gate electrode a negative gate voltage for switch-off to prevent a threshold voltage from shifting generated by the positive gate voltage pulse for switch-on.

Claim 2. The X-ray imaging device as stated in Claim 1, wherein the absolute value of the negative gate voltage for switch-off of the thin film transistor for pixel switching is 30 to 200% of the absolute value of the positive gate voltage pulse for switch-on.

Claim 3. The X-ray imaging device as stated in Claim 1, wherein the device further comprises a noise corrective circuit comprising at least one stage of a field effect type thin film transistor connected to the signal output line in parallel, and the field effect type thin film transistor being supplied with a negative gate voltage for switch-off to prevent a threshold voltage from shifting caused by the positive gate voltage pulse for switch-on.

Claim 4. The X-ray imaging device as stated in Claim 3, wherein the value at high voltage side of the gate voltage pulse for the field effect type thin film transistor in the noise corrective circuit is reduced by the value of the threshold voltage-shift.

Claim 5. An X-ray imaging device comprising

an X-ray-electric conversion layer,

a common electrode arranged on one surface of the layer,

a plurality of pixel electrodes arranged in an array on the other surface of the layer,

a field effect thin film transistor connected to each pixel electrode for pixel switching, including source, drain and gate electrodes, either one of source and drain electrodes being connected to the pixel electrode, the other one being connected to a signal output line, and the gate electrode being connected

to a scanning line, and

a field effect type thin film transistor for imaging a signal from the field effect type thin film transistor for pixel switching, and the thin film transistor being driven by a driving gate voltage pulse,

wherein the X-ray imaging device comprises a correction control circuit for supplying a gate voltage with a polarity opposite to the gate voltage pulse to at least a part of the gate electrodes of the thin film transistors used for the X-ray imaging device, and

the correction control circuit supplies the gate electrode with a gate voltage having a polarity of a direction that makes the mean value of the driver gate pulses at operating period be zero or reduced, during non-image reading period of the X-ray imaging device.

Claim 6. The X-ray imaging device as stated in Claim 5, wherein the device further comprises

a noise corrective circuit comprising field effect type thin film transistors connected to the signal output line in parallel, and

a correction control circuit for supplying a gate voltage pulse with a polarity opposite to the driver gate voltage pulse to the gate electrode of the thin film transistor in the noise corrective circuit while the pixel switching thin film transistor

is operating,

and the correction control circuit supplies the gate electrode of the noise corrective circuit at non-operating period with a gate voltage pulse having a polarity of a direction that makes the mean polarity value of the gate voltage pulses be zero or reduced at operating period.

Claim 7. The X-ray imaging device as stated in Claim 6, wherein the average supply voltage to the gate electrode of the thin film transistor in the noise corrective circuit is in the range between +30% and -30% of the average supply voltage to the pixel switching thin film transistor.

Claim 8. The X-ray imaging device as stated in Claim 5, wherein the device comprises

a protection diode composed of a field effect type thin film transistor connected to each pixel electrode, and limiting the voltage of the pixel electrode not to exceed the protection voltage,

a power source supplying a predetermined voltage to the common electrode,

a gate drive circuit switching the thin film transistor by supplying a driver gate voltage pulse to the gate electrode at operating period, and

a power circuit for the protection diode connected to the

protection diode and supplying a limited voltage lower than the voltage of the power source thereto,

wherein the power source for the protection diode supplies a voltage lower than the limited voltage at operating period to the protection diode at non-operating period.

Claim 9. The X-ray imaging device as stated in Claim 1, wherein the X-ray-electric conversion layer is comprised of a layer converting directly an X-ray image into an electric charge image, or of a layer converting an X-ray image into an optical image and then converting the converted optical image into an electric charge image.

Claim 10. The X-ray imaging device as stated in Claim 5, wherein the signal of the pixel electrode is picked up at every frame comprising an X-ray radiating period and a blanking period of non-radiating, and the non-operating period corresponds to the blanking period.

Claim 11. The X-ray imaging device as stated in Claim 1 or Claim 5, wherein the thin film transistor is made of amorphous silicon.

Claim 12. The X-ray imaging device as stated in Claim 6, wherein the thin film transistor for pixel switching and the thin film transistor in the noise corrective circuit are formed on the

same substrate.

Claim 13. An X-ray imaging device comprising

an X-ray-electric conversion layer,

a plurality of pixel electrodes arranged in an array on one surface of the layer,

a field effect type thin film transistor for pixel switching, one of whose source electrode and drain electrode is connected to the pixel electrode, the other thereof being connected to a signal output line, and whose gate electrode being connected to a scanning line,

a gate drive circuit switching the thin film transistor by supplying a gate voltage pulse to the gate electrode,

a noise corrective circuit comprising field effect type thin film transistors connected to the signal output line in parallel, and

a correction control circuit for supplying a gate voltage pulse having an opposite polarity to the driving gate voltage pulse to the gate electrode of the thin film transistor in the noise corrective circuit during operating period of the pixel switching thin film transistor,

wherein the correction control circuit supplies the gate electrode of the noise corrective circuit at non-operating period with a gate voltage pulse having a polarity of a direction that makes the mean polarity value of the gate voltage pulse be zero

or reduced at operating period.

Claim 14. The X-ray imaging device as stated in Claim 13, wherein the thin film transistors constituting the noise corrective circuit are arranged in a plurality of stages.

Claim 15. An X-ray imaging device comprising

an X-ray-electric conversion layer,

a plurality of pixel electrodes arranged in an array on one surface of the layer,

a field effect type thin film transistor for pixel switching, one of whose source electrode and drain electrode is connected to the pixel electrode, the other thereof being connected to a signal output line, and whose gate electrode being connected to a scanning line,

a protection diode comprising at least one field effect type thin film transistor connected to each pixel electrode and limiting the voltage of the pixel electrode to the value not to be in excess of the protection voltage,

a power source supplying a predetermined voltage to the common electrode,

a gate drive circuit switching the thin film transistor by supplying a driver gate voltage pulse to the gate electrode at operating period, and

a power circuit for the protection diode connected to the

protection diode and supplying a limited voltage lower than the voltage of the power source,

wherein the power source for the protection diode supplies a voltage lower than the limited voltage at operating period to the protection diode at non-operating period.